Reference

More efficient maintenance

Digitalization is key to profitability at MAHLE. The company is currently rolling out an easy-to-use and secure remote access solution across its global production sites. This digital solution is part of the long-term digitalization strategy of MAHLE, but it will also pay off in the short term: it makes maintenance more efficient, contributing to better overall productivity by optimizing machine performance and eliminating issues before they become critical.

The idea for this remote access solution was born at the MAHLE production site in Mühlacker, the largest German production location of the MAHLE thermal management business unit. The Mühlacker team wanted to replace the existing, outdated remote access solution with a standardized approach up to the latest cybersecurity and access control requirements, remembers Yann Kovacs, Global Service Delivery Manager for IT at MAHLE: “Initially, the project was intended to be more of a proof of concept, and we expected that we would only roll it out after some time. But then COVID-19 hit.” The resulting restrictions meant that service, maintenance, and commissioning staff could suddenly no longer travel – but as a manufacturer, MAHLE needed a solution to ensure that operations continued running smoothly, including commissioning new lines. The pandemic put the Mühlacker team in a whole new position, says Yann Kovacs: “All of a sudden, the project got much more attention, and we had multiple requests from other sites to connect their machines, too.” Within just a few weeks, this local project turned into a global rollout, and luckily, the solution was already fully operational. “We were still working on the documentation, of course, but from a technical perspective, everything was ready and working.”

Highlights of the solution:

- Cost and time savings
- Higher productivity
- Global connectivity
- Sustainability

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Networking expertise and people

According to Yann Kovacs, one key ingredient for ensuring the project's success was good collaboration between IT and Operational Technology - OT, among the various sites, but also between the project team at MAHLE and the technology supplier Siemens: "While we were developing the initial solution with the site in Mühlacker in mind, we already designed it as a standard service for all of our plants. We had the IT team on board, we had the automation team in Mühlacker on board, so we had both the IT and the business perspectives in our team. And we had a very capable partner with Siemens who could support us with their know-how and a very cost-effective solution." Since then, 135 machines have been connected to the new solution, and 160 users are registered on the four servers in Europe, America, and the Asia-Pacific region. "And the feedback we get from those users is very positive. The solution is easy to set up, easy to use, and is working fine – what more can you wish for," confirms Yann Kovacs.

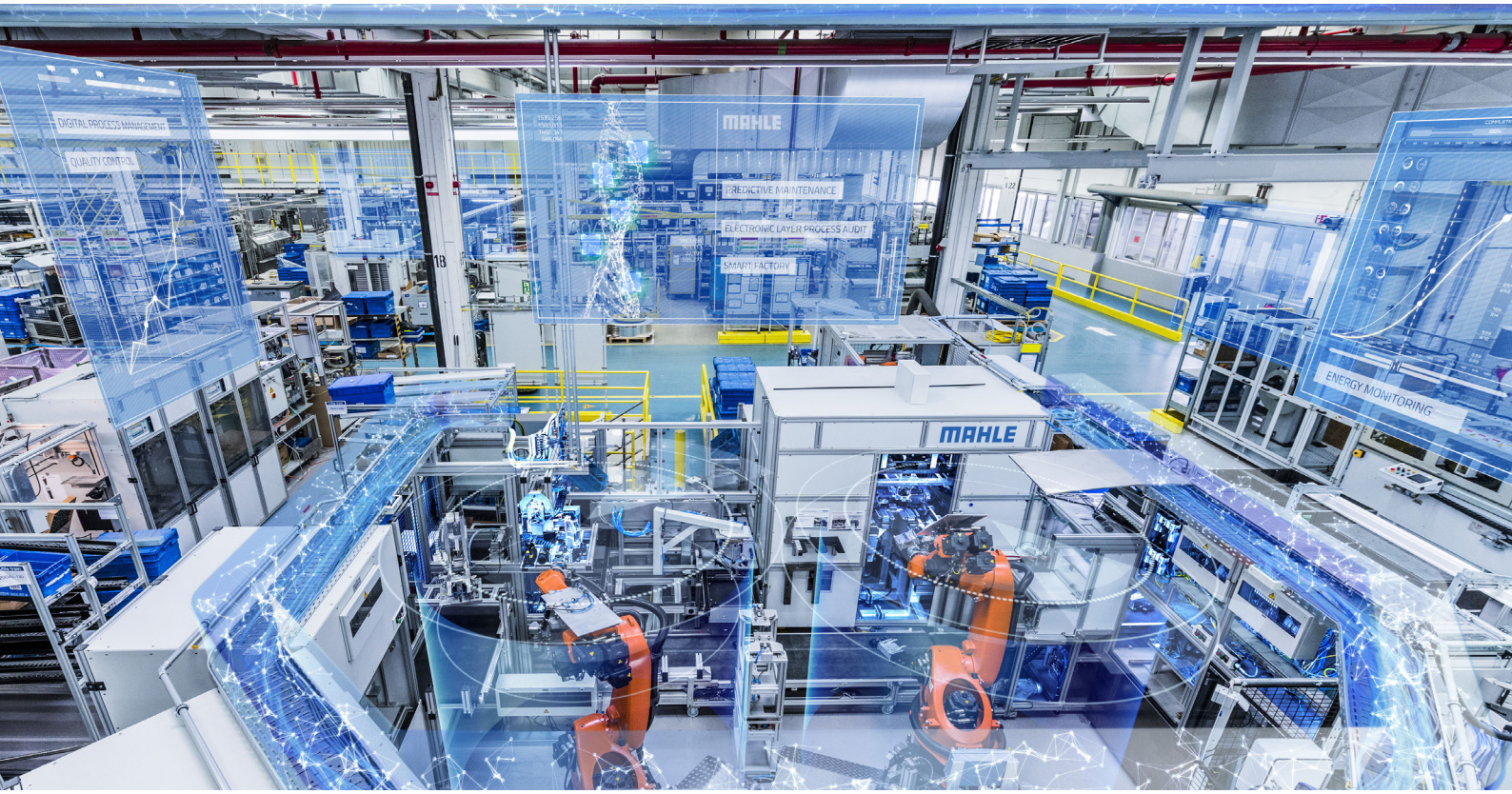
A standard solution for global use

The new solution is very straightforward to implement: each machine is equipped with a SCALANCE SC600 Industrial Security Appliance that securely isolates both, the machine and network. This network segmentation, part of the Defense-in-Depth industrial security concept from Siemens, protects the automation network from cyber threats while enabling reliable data transfer to and from the IT level. The security appliances connect to the SINEMA Remote Connect management platform used for monitoring connections, supervising access, and user management. On the shopfloor level, the operator activates the remote access via a key switch.

The lean, industry-grade solution not only has an excellent price/performance ratio, as Yann Kovacs confirms, but it is also very adaptive: "At the moment, MAHLE has almost 150 production sites located in the Americas, Asia, Africa, and Europe. All these sites have their own systems and history, and with the Siemens solution, we can connect virtually any machine to the new servers.

"The solution is easy to set up, easy to use, and is working fine – what more can you expect."

Yann Kovacs, Global Service Delivery Manager for IT, MAHLE.



Mahle's production in Mühlacker plant

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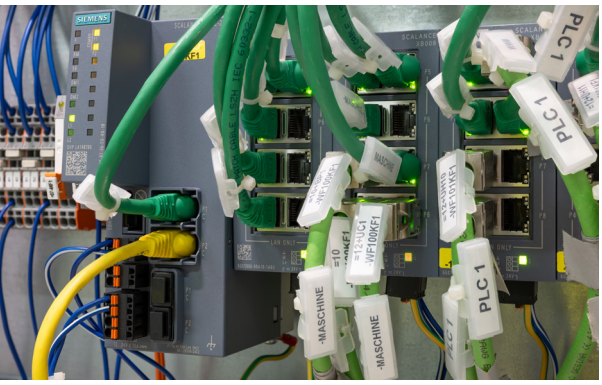
Through these servers, we have a standard tool to manage the system, which helps us deploy this solution in a very cost-effective manner," adds Sascha Schönfeld, Head of Digitalization Manufacturing at MAHLE.



Each machine is equipped with a SCALANCE S Industrial Security Appliance that securely isolates both the machine and network.

From exceptional to everyday

Within just a few months of the rapid rollout during the pandemic, the new solution had to prove its worth. There were two lines ready for commissioning, and with no possibility of traveling to the respective sites in Asia and North America, the team in Stuttgart had to support their colleagues remotely – and using the new system, this worked very well, says Sascha Schönfeld: "Frankly, this was the only way we could make this happen during COVID." From then on, the new solution has become part of everyday work for all the sites which already implemented it. In most cases, both, the internal and external support teams no longer need to travel to fix an issue. This, of course, saves travel expenses and reduces the carbon footprint of our operations – but the main benefit is that it cuts service times dramatically," explains Sascha Schönfeld. In the past, the operating staff on-site sometimes had to wait up to two days for a service technician to arrive – a delay that in the worst-case scenario could translate to several days of downtime and significant loss of production. Now all they need to do is contact the service partner, activate access to the machine, and within half an hour they receive the required support. And even when the issue requires travel – for example, due to a mechanical failure – the service technician can prepare for the on-site visit more effectively (e.g., so that all spare parts are ready). The solution also helps save time on a local level. The on-site maintenance teams now can fix many issues from their office, as Yann Kovacs explains: "Some of our sites are quite large, and getting from A to B can take some time. So yes, these are also significant savings, even though they are hard to calculate."

Key to the success of the project was the close collaboration between IT and OT, as well as between the project team at MAHLE and the technology supplier Siemens.

A new way of working

When talking about specific savings, Sascha Schönfeld says that MAHLE initially wanted to calculate how much more efficient maintenance has become through the new system, but quickly saw that measuring only efficiency was not the right way to assess the benefits of the new solution: "What we found out when we were looking at the figures was that people are now working differently from how they worked before." The possibility of remote maintenance significantly lowers the barrier for getting support, says Sascha Schönfeld: "For example, when our on-site maintenance teams notice something, they will now get in

"The remote maintenance solution enables our digital transformation."

Sascha Schönfeld, Head of Digitalization Manufacturing at MAHLE.

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touch with the external service, ask them to have a look at what they think is not quite right with the machine. No one would have gotten on a plane for this." Over time, these smaller tweaks will contribute to better overall productivity by optimizing machine performance and eliminating issues before they become critical.

"The remote maintenance of our production facilities is an important component of the continuous improvement of our operational excellence. In SCALANCE from Siemens, we have found an efficient and safe solution for this, with which we realize significant cost savings in maintenance work."

Martin Weidlich, Member of the MAHLE Management Board

A strategic asset for digitalization

With these obvious benefits, Sascha Schönfeld and Yann Kovacs are looking forward to integrating more machines and sites into the new solution. Using SCALANCE and SINEMA Remote Connect is already mandatory for all new machines supplied to MAHLE, and all sites can request that their existing equipment will be integrated as well.

"We now have a proven solution with proven technology and with a global network of spare parts and support to rely on. Plus, the system is open, so it can work with many different networks and systems but can still be efficiently managed for IT," says Yann Kovacs.

This open solution is also important for another reason, says Sascha Schönfeld: "Manufacturing industries are currently experiencing a talent crunch on every level. There are just not enough specialists to fill open positions; there is also not enough qualified staff for manufacturing in general.

So, the big question is, how can we still get the job done? For this, we need digitalization. Having secure remote access is a convenient solution for supporting maintenance. It makes life easier for our teams and helps us save time and money as a company – but it also enables our digital transformation at MAHLE."

"Remote maintenance of production facilities has become indispensable in today's production day. At the same time, MAHLE must maintain its high demands on cybersecurity, especially in the OT environment. Siemens offers us comprehensive solutions for securing our production networks, which at the same time enable us to meet the dynamic requirements of our plants."

Markus Bentele, Vice President Information Technology MAHLE

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Security information

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept. For more information about industrial security, please visit

www.siemens.com/industrialsecurity